LC1486

600mA High PSRR, Fast Response Linear Regulator

DESCRIPTION

LC1486 series is a group of positive voltage output, low power consumption, low dropout voltage regulator.

LC1486 can provide output value adjustable from 0.8V to 5.0V.

LC1486 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability.

LC1486 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. It uses trimming technique to guarantee output voltage accuracy within ±2%. And it also provides foldback short-circuit protection, thermal protection and output current limit function.

LC1486 is available in SOT23-5 and SC70-5 packages which are lead free.

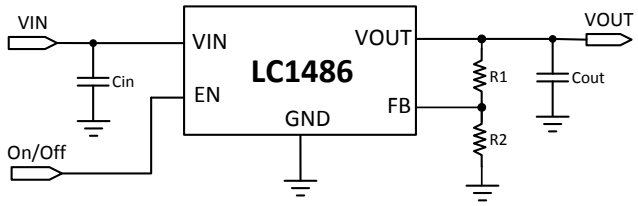
FEATURES

- Low Power Consumption: 40uA (Typ.)
- Maximum output current: 600mA
- Low dropout Voltage:
  170mV@Iout=300mA,Vout=3.3V
  355mV@Iout=600mA,Vout=3.3V
- Build-in chip enable and discharge circuit
- Input voltage range: 2.5~6V
- Adjustable Output from 0.8V to 5.0V
- Output Voltage Accuracy: ±2%
- Ouput current limit: 1A (Typ.)
- OCP/SCP/TSD protection

APPLICATIONS

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

TYPICAL APPLICATION

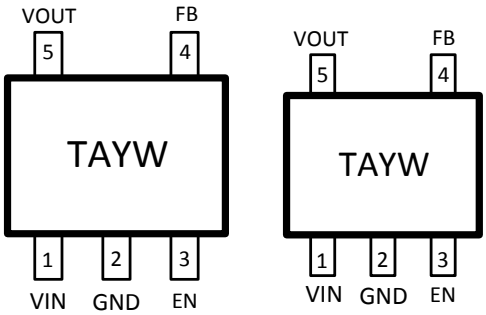


Note:

1) Input capacitor (Cin=1uF) and Output capacitor (Cout=1uF) are recommended in all application circuit.

2) $V_{OUT}=V_{FB}*(1+\frac{R1}{R2})$, $V_{FB}=0.8V$

PIN OUT & MARKING



SOT23-5 SC70-5

TA: Product Code
YW: Date code (Year & Week)

ORDERING INFORMATION

PART No.	PACKAGE	Tape&Reel
LC1486CB5TR	SOT23-5	3000/Reel
LC1486CA5TR	SC70-5	3000/Reel

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		8V
Operating Junction Temperature(Tj)		150°C
Ambient Temperature(Ta)		-40°C –85°C
Power Dissipation	SOT23-5	400mW
	SC70-5	400mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Note: *Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.*

RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	2.5V to 6V
Ambient Temperature	-40°C –85°C

ELECTRICAL CHARACTERISTICS

(Test Conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IN}	Input Voltage		2.5		6	V
V_{FB}	Regulated Feedback Voltage	V_{IN} =3.3V, I_{OUT}=10mA	0.784	0.8	0.816	V
V_{DROP}*	Dropout Voltage	V_{OUT}=1.8V, I_{OUT} =300mA		900	1350	mV
		V_{OUT} =2.5V, I_{OUT} =600mA		550	825	mV
		V_{OUT} =3.3V, I_{OUT} =600mA		355	500	mV
$\frac{\Delta Vout}{\Delta Vin \cdot Vout}$	Line Regulation	I_{OUT} =10mA, 2.5V≤V_{IN}≤6V		0.05	0.2	%/V
$\frac{\Delta Vout}{\Delta Iout}$	Load Regulation	V_{IN} =4.3V, V_{OUT} =3.3V 0mA≤I_{OUT}≤600mA		50	80	mV
I_Q	Supply Current	V_{IN} = V_{OUT} +1V		40	100	uA
$I_{STANDBY}$	Supply Current (Srandby)	V_{IN} = V_{OUT} +1V, V_{EN}=GND		0.1	1.0	uA
$\frac{\Delta Vout}{\Delta T \cdot Vout}$	Output Voltage Temperature Coefficiency	I_{OUT} =10mA		±100		ppm/°C
PSRR	Ripple Rejection	F=1KHz, Ripple=1Vp-p V_{IN} = V_{OUT} +1V		60		dB
I_{LIM}	Current Limit	V_{IN} =4.3V, V_{OUT} =3.3V		1		A
I_{SHORT}	Short Current Limit	V_{OUT} =0V		200		mA
$R_{DISCHARGE}$	Discharge Resistor	EN=0, V_{OUT} =3V		280		ohm
V_{ENH}	EN Input Voltage “H”		1.3		Vin	V
V_{ENL}	EN Input Voltage “L”		0		0.35	V
T_{SD}	Thermal Shutdown Temp			160		℃

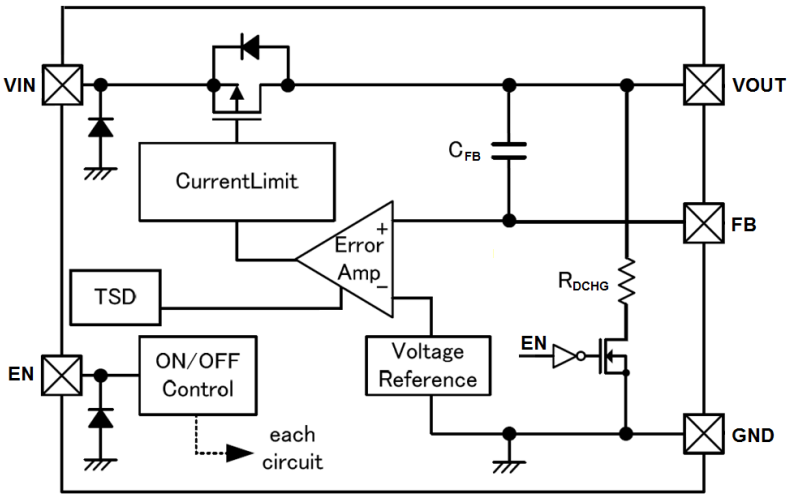
T_{SH}	Thermal Shutdown Hysteresis			30		°C

***Note:** * $V_{DROP}=V_{IN}1-(V_{OUT}2*0.98)$ V_{OUT} 2 is the output voltage when V_{IN} = V_{OUT} 1+1.0V and I_{OUT} =600mA. V_{IN} 1 is the input voltage at which the output voltage becomes 98% of Vout1 after gradually decreasing the input voltage.*

PIN DESCRIPTION

PIN #	NAME	DESCRIPTION
1	VIN	Supply Voltage Input. Supply voltage can range from 1.8V to 6V. Bypass with a 1µF capacitor to GND.
2	GND	Ground Pin
3	EN	Enable Pin. This pin has an internal pull-down resistor. A logic low reduces the supply current to less than 1µA. Connect to IN for normal operation.
4	FB	Feedback Pin (adjustable voltage version only). This is used to set the output voltage of the device.
5	VOUT	Output Voltage

BLOCK DIAGRAM



EXPLANATION

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LC1486 can provide output value adjustable from 0.8V to 5.0V.

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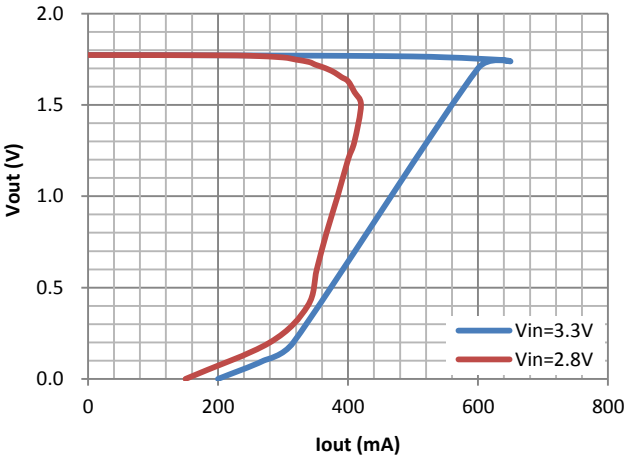
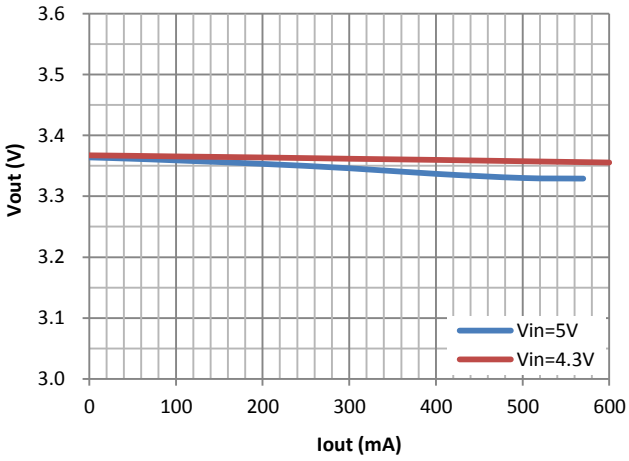
LC1486 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. It uses trimming technique to guarantee output voltage accuracy within±2%. And it also provides fold-back short-circuit protection, thermal protection and output current limit function.

TYPICAL PERFORMANCE CHARACTERISTICS

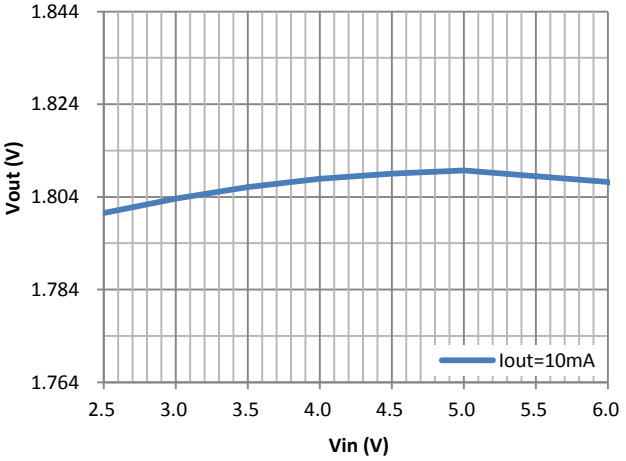
Load Regulation
(Vout=1.8V)



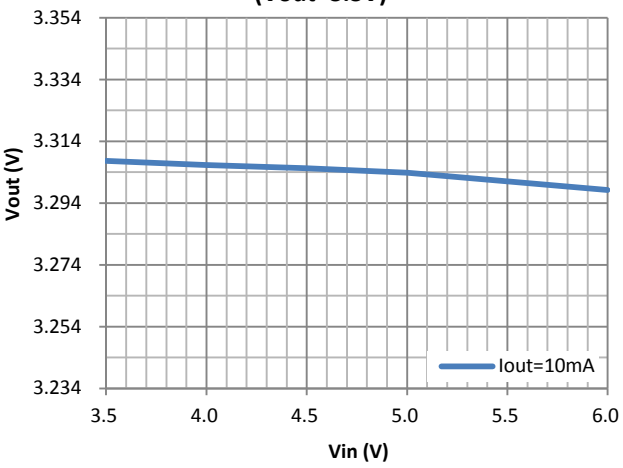
Load Regulation
(Vout=3.3V)



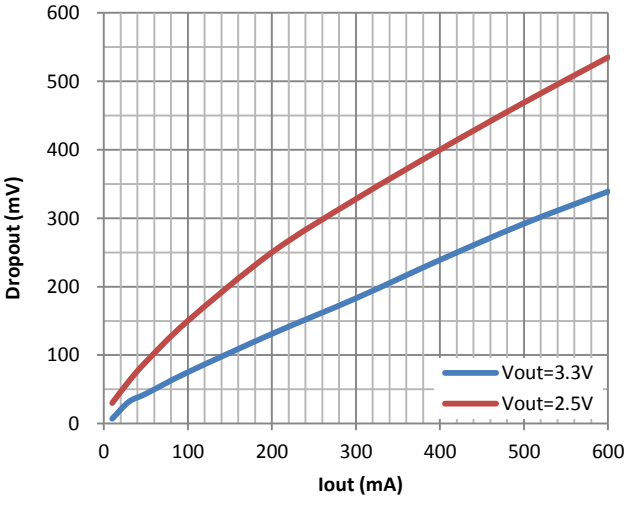
Line Regulation
(Vout=1.8V)



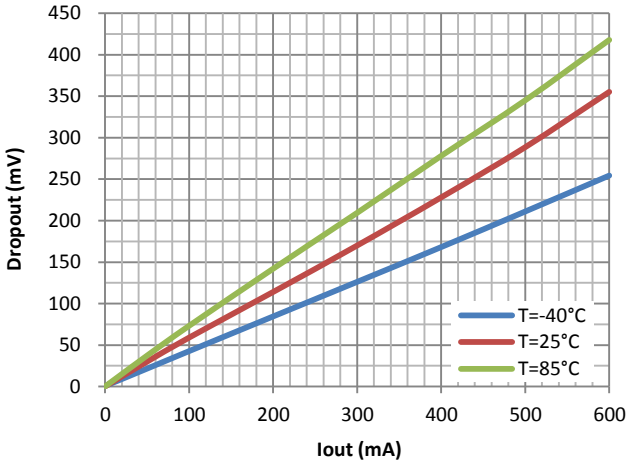
Line Regulation
(Vout=3.3V)



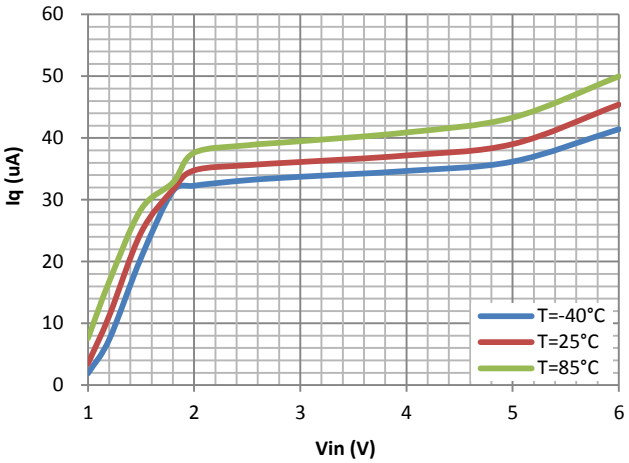
Dropout Voltage



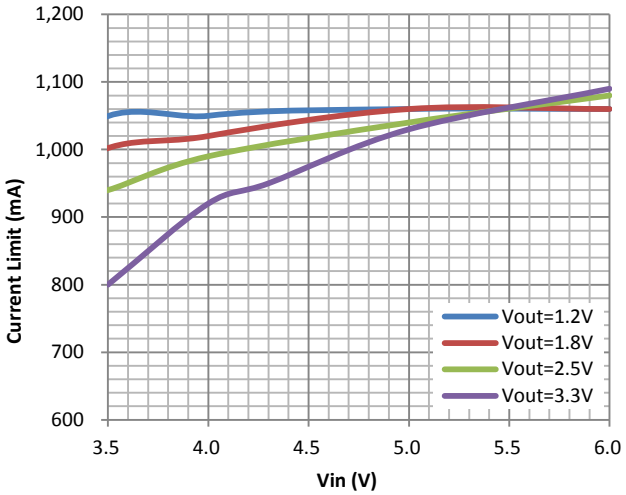
Dropout Voltage vs. Temp
(Vout=3.3V)



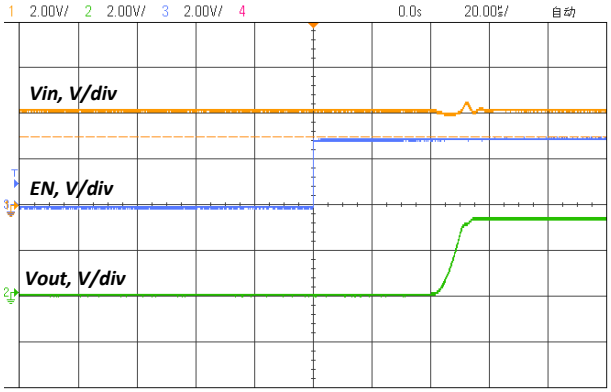
Iq
(Vout=1.8V)



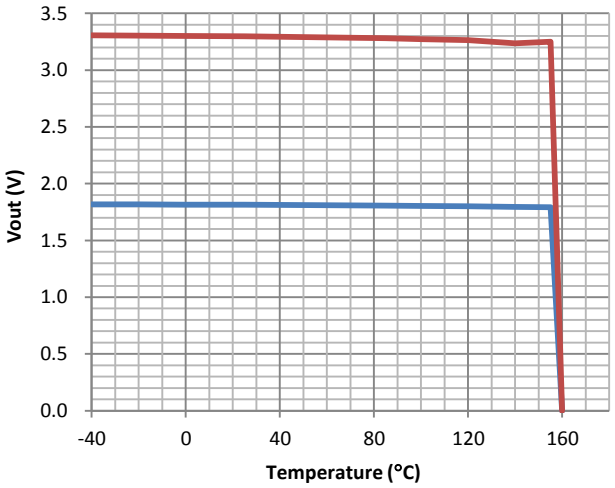
Current Limit vs. VIN



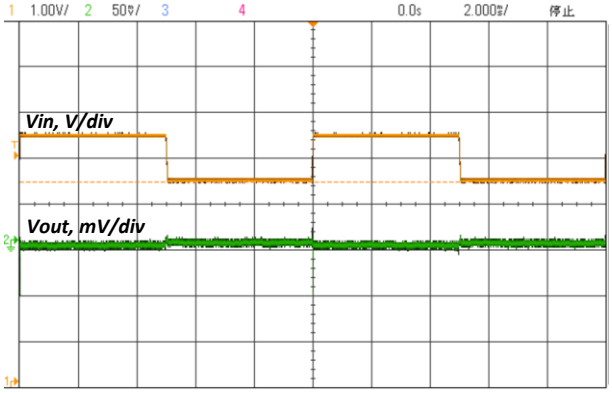
EN Chip Enable Response
(Orange: Vin; Blue: EN; Green: Vout)



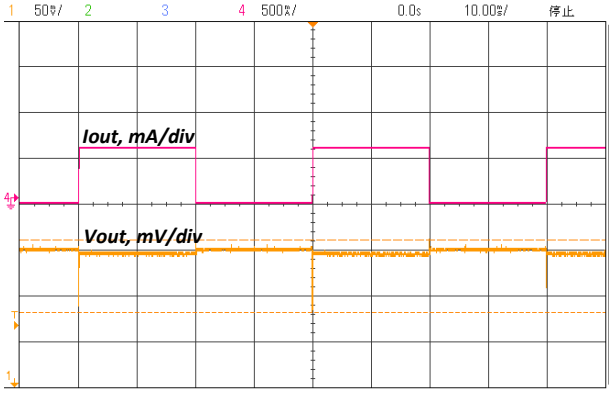
Vout vs. Temperature



Line Transient Response
Vout=3.3V, Iout=10mA
Vin=4.3-5.3V, Vout p-p=78mV
(Orange: Vin; Green: Vout)



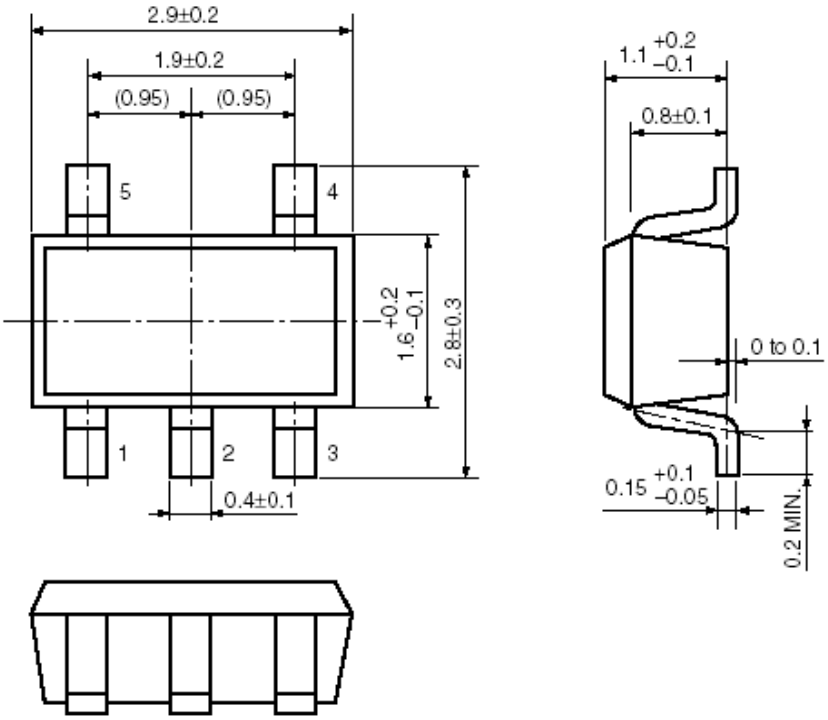
Load Transient Response
Vin=4.3V, Vout=3.3V, Iout=10-600mA
Trise=1uS, Tfall=1uS , Vout p-p=74mV
(Pink: Iout; Orange: Vout)



PACKAGE OUTLINE

Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



Package	SC70-5	Devices per reel	3000Pcs	Unit	mm

Package dimension：